

CLAIMS

What is claimed is:

1. An aircraft air conditioning system mixer comprising:
 - a first tube having a passage extending between an inlet and an outlet; and
 - a second tube at least partially surrounding said first tube forming a cavity, said first tube having a circumferential corrugation in said first tube forming at least one lobe fluidly connecting said first tube and said cavity.
2. The mixer according to claim 1, wherein said inlet is a conditioned air inlet for receiving conditioned air from the pack.
3. The mixer according to claim 2, wherein said second tube includes a recirculation air inlet for receiving recirculation air from an aircraft cabin, and said outlet for delivering mixed air to the cabin.
4. The mixer according to claim 2, wherein a flight deck supply tube extends from said mixer with an inner tube extending from said first tube and fluidly connected therewith, said inner tube arranged at least partially within said flight deck supply tube, forming another cavity between said inner tube and said flight deck supply tube, said another cavity for receiving trim air from a pack.

5. The mixer according to claim 3, wherein the recirculation air is hotter than the conditioned air, the recirculation air heating the mixer and conditioned air preventing ice formation within said mixer.
6. The mixer according to claim 1, wherein multiple lobes are arranged about a circumference of said first tube with said lobes fluidly connecting said cavity and said passage.
7. The mixer according to claim 4, wherein said inner tube is arranged between said lobes and said inlet.
8. The mixer according to claim 6, wherein said lobes comprise peaks and valleys defined by a sloped wall sloping from an inlet side toward an outlet side.

9. An aircraft air conditioning system comprising:
 - a pack producing conditioned air;
 - a cabin providing recirculation air;
 - a mixer fluidly connected between said pack and said cabin, said mixer including a fresh air tube having a passage extending between an inlet fluidly connected to said pack and an outlet fluidly connected to said cabin;
 - an outer tube at least partially arranged about at least a portion of said fresh air tube forming a cavity, said outer tube having a recirculation air inlet connected to said cabin; and
 - a circumferential corrugation in said fresh air tube forming at least one lobe fluidly connecting said cavity and said passage.
10. The system according to claim 9, wherein an inner tube extends from said fresh air tube and is fluidly connected therewith, a flight deck supply tube extending from said mixer and at least partially surrounding said inner tube forming another cavity between said inner tube and said flight deck supply tube, a trim air tube extending from said flight deck supply tube delivering trim air from said pack to said another cavity.
11. The system according to claim 9, wherein a plurality of said lobes are arranged in a wall of said fresh air tube.
12. The system according to claim 11, wherein said plurality of said lobes comprise peaks and valleys defined by a sloped wall sloping from an inlet side toward an outlet side.